09/496041
STN Search Summary

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FILE 'CAPLUS' ENTERED AT 17:57:37 ON 04 APR 2001
L1 151 S GMP (2W) (SYNTHASE? OR SYNTHETASE?)
L2 4 S L1 AND AMMONIAGENES

L2 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2001 ACS
AN 1999:358807 CAPLUS
TI Production of 5'-GMP from glucose by coupling reaction between Corynebacterium ***ammoniagenes*** and self-cloned Escherichia coli
AU Fujio, Tatsuro; Maruyama, Akihiko; Aoyama, Yoshihide; Kawahara, Shin; Nishi, Tatsunari
SO Seibutsu Kogaku Kaishi (1999), 77(3), 104-112
AB An enzymic process for the prodn. of 5'-guanylic acid (GMP), a flavoring nucleotide, was developed. Since it is difficult to produce GMP by direct fermn., we examd. a method of fermentatively producing 5'-xylanthilic acid (XMP), a precursor of GMP, first, and then enzymically aminating XMP to produce GMP. The amination reaction is catalyzed by ***GMP*** ***synthetase*** (or XMP aminase) and requires ATP. As ATP is very expensive, we developed a means of producing GMP from XMP without the need to add ATP by regenerating and repeatedly using a catalytic amt. of ATP. In the reaction to regenerate ATP, a "resting cell"-that is a bacterial cell in which the permeation barrier against nucleotides is removed by treating the cell with a surfactant-was used as an enzyme source. First, we developed a self-coupling reaction in which the ATP-regenerating and ***GMP*** ***synthetase*** activities possessed by resting cells of Corynebacterium ***ammoniagenes*** were utilized. This enabled the XMP fermn. liquor and the culture liquor of the converting strain to be utilized as sources of XMP and ***GMP*** ***synthetase*** , resp. Next, we developed a process to make use of the ATP-regenerating activity possessed by the cells after XMP fermn. In this process, we employed E. coli whose ***GMP*** ***synthetase*** activity was enhanced 370-fold compared with that of the host by self-cloning as a source of **GMP*** ***synthetase*** . Establishment of this coupling reaction between different cells, in which ATP (and AMP) is exchanged between resting cells of an XMP-producing strain and a small amt. of Escherichia coli resting cells, made it possible to in- crease the ratio of the XMP fermn. liquor and to greatly improve the GMP productivity. Also, since GMP could be produced from glucose using a single fermentor, a process seemingly very close to direct fermn. was established. Application of the process to the prodn. of 5'-inosinic acid (IMP) and CDP-choline is also briefly discussed.

L2 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2001 ACS
AN 1998:749427 CAPLUS
TI New production methods for useful substances using an ATP regeneration system
AU Fujio, Tatsuro; Maruyama, Akihiko; Mori, Hideo
SO Baiosaiensu to Indasutori (1998), 56(11), 737-742
AB A review with 26 refs. A new prodn. process for producing useful microbial metabolites has been developed by coupling ATP-requiring enzyme reactions with ATP regeneration systems in microbial cells. Glucose can be used instead of ATP in the process. GMP prodn. using ***GMP*** ***synthetase*** and resting cells of Corynebacterium ***ammoniagenes*** or Escherichia coli is described. The prodn. of 5'-IMP and CDP choline is also described.

L2 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2001 ACS
AN 1997:348318 CAPLUS
TI High level expression of XMP aminase in Escherichia coli and its application for the industrial production of 5'-guanylic acid
AU Fujio, Tatsuro; Nishi, Tatsunari; Ito, Seiga; Maruyama, Akihiko
SO Biosci., Biotechnol., Biochem. (1997), 61(5), 840-845
AB To improve the efficiency of the enzymic conversion of 5'-xanthylic acid (XMP) to 5'-guanylic acid (GMP), the authors attempted to increase the activity of the conversion enzyme, XMP aminase (***GMP*** ***synthetase***), encoded by the guaA gene in Escherichia coli. By connecting the PL promoter of .lambda. phage, the SD sequence of trpL of E. coli, and aTG, at a suitable position upstream of the guaA gene, they obtained plasmid pPLA66. Sequencing of the nucleotides of the upstream region of the guaA gene on pPLA66 showed that the C-terminal region of the guaB gene, which encodes IMP dehydrogenase, was conserved and a short peptide consisted of 14 amino acids was coded. E. coli MP347/pPLA66 showed an increase in the activity of approx. 370 times when compared with that of the strain MM294, and the amt. of the enzyme protein represented approx. 34% of the total cellular protein. Strain MP347/pPLA66 was cultivated in a 5-L jar fermentor using a medium which contained mainly corn steep liquor. The culture broth had high XMP aminase activity. In the conversion reaction using mixed broths consisted of 600 mL of XMP-fermn. broth of Corynebacterium ***ammoniagenes*** KY13203 and 30 mL of cultured broth of E. coli MP347/pPLA66, a surfactant, Nymeen S-215 and xylene were added to the reaction mixt. to make the cell membrane permeable to nucleotides. After 23 h of the reaction, 70 mg/mL (131 mM) of GMP.Na2.7H2O was accumulated from 83 mg/mL (155 mM) of XMP.Na3.7H2O, without addn. of ATP. The molar conversion yield was approx. 85%. The facts that the cell membrane was treated to allow nucleotides to permeate and that the conversion reaction proceeded well enough in spite of a small amt. of E. coli cells indicate ATP was regenerated from AMP by C. ***ammoniagenes*** cells and supplied to E. coli cells. Therefore, it was considered that the coupling reaction between these two kind of strains was established.

L2 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2001 ACS
AN 1992:649919 CAPLUS
TI Breeding of 5'-GMP producing microorganism by intergeneric protoplast fusion between Brevibacterium ***ammoniagenes*** and Corynebacterium glutamicum
AU Cho, Jung Il; Chu, Moonjin
SO Nonglim Nonjip (1991), 31, 25-31
AB In order to develop a strain which can produce 5'-guanylic acid directly, intergeneric protoplast fusion between 5'-xanthylic acid-producing B. ***ammoniagenes*** and C. glutamicum contg. ***GMP*** ***synthetase*** was attempted. An improved B. ***ammoniagenes*** mutant was obtained with nitrosoguanidine mutagenesis. Mutant CH21 produced 5'-XMP 56% higher than the parental strain. The optimum conditions for protoplast formation and cell wall regeneration for each parental strains were examd. and the effects of pH and polyethylene glycol treatment concn. on protoplast fusion were examd. In intergeneric protoplast fusion between B. ***ammoniagenes*** CH21 and C. glutamicum ATCC 21171S, 7.91 .times. 10-7 of fusion frequency per regenerated cell was obsd. and B. ***ammoniagenes*** fusants RC101 and RC102 having ***GMP*** ***synthetase*** activity were selected.

STN Search Summary/acetate-induced promoter

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     FILE 'CAPLUS' ENTERED AT 16:51:09 ON 04 APR 2001
L1       121825 S PROMOTER?
L2         5345 S L1 AND REVIEW/DT
L3           65 S L2 AND ACETATE?
L4            0 S L3 AND ISOCITRATE?
L5            0 S L3 AND LYASE?
L6            0 S L2 AND (ACETATE (3W) INDUCIBLE)
L7         1265 S (ISOCITRATE LYASE)
L8           37 S L7 (S) PROMOTER?
L9           19 S L8 AND ACET?
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L9 ANSWER 18 OF 19 CAPLUS COPYRIGHT 2001 ACS
AN 1993:227528 CAPLUS
TI The regulatory region of the isocitrate lyase gene of Corynebacterium glutamicum
IN Katsumata, Ryoichi; Takano, Yutaka
PA Kyowa Hakko Kogyo Co., Ltd., Japan
SO Eur. Pat. Appl., 28 pp.

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 530765	A2	19930310	EP 1992-114975	19920902
	EP 530765	A3	19940504		
	EP 530765	B1	19970129		
	JP 05056782	A2	19930309	JP 1991-221885	19910902
	JP 3036912	B2	20000424		
	US 5439822	A	19950808	US 1992-938333	19920828
	CA 2077308	AA	19930303	CA 1992-2077308	19920901
	CA 2077308	C	19990112		
	AT 148500	E	19970215	AT 1992-114975	19920902
	US 5700661	A	19971223	US 1996-660216	19960603
PRAI	JP 1991-221885	19910902			
	US 1992-938333	19920828			
	US 1995-398456	19950303			

AB The ***promoter*** region of the ***isocitrate*** ***lyase*** gene of a coryneform bacterium is cloned for use in inducible expression of heterologous genes in coryneform bacteria. A gene under control of this sequence is strongly expressed when the transformants are cultured in a medium contg. a non-sugar C source and is repressed in a sugar-contg. medium. The DNA can be used for the manuf. of heterologous proteins or enzymes in coryneform bacteria, e.g. Corynebacterium, Brevibacterium, and Microbacterium.